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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/006,945	12/03/2001	Shigctaka Yamamoto	X2007.0092/P092	2752

7590 11/28/2003

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EXAMINER	
MCINTOSH III, TRAVISS C	

ART UNIT	PAPER NUMBER
1623	

DATE MAILED: 11/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

File Copy

Office Action Summary	Application No.	Applicant(s)	
	10/006,945	YAMAMOTO ET AL.	
	Examiner	Art Unit	
	Traviss C McIntosh	1623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 September 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

The Examiner of the U.S. Patent application SN 10/006,945 has changed. In order to expedite the correlation of papers with the application please direct all future correspondence to the Technology Center 1600, Art Unit 1623, Attn: Examiner Traviss McIntosh.

The Amendment filed September 12, 2003 has been received, entered into the record, and carefully considered. The following information provided in the amendment affects the instant application by:

Claim 9 has been amended.

Claims 10-15 have been added.

Remarks drawn to rejections of Office Action mailed March 25, 2003 include:

112 2nd paragraph rejections: which have been overcome by applicant's amendments and have been withdrawn.

103(a) rejection: which has been maintained for reasons of record.

An action on the merits of claims 1-15 is contained herein below. The text of those sections of Title 35, US Code which are not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 103

The rejection of claims 1-9 under 35 U.S.C. 103(a) as being unpatentable over the combination of Zemans et al. (US Patent 4,144,089) and Rowell et al. (4,804,384) is maintained for reasons of record. New claims 10-15 are rejected as being unpatentable over the combination of Zemans et al. (US Patent 4,144,089) and Rowell et al. (4,804,384).

Claim 1 is drawn to a method of treating a wooden material comprising subjecting the wood to bleaching treatment and an acetylation treatment. Claim 2 provides that the bleaching is carried out before the acetylation. Claim 3 provides the wooden material is washed and dried between bleaching and acetylation. Claim 4 provides the bleaching solution is hydrogen peroxide, chlorite solution, or a hypochlorite solution and that the pH is adjusted to 9-12. Claim 5 provides that the acetylation treatment is in the range of 1-25% based on weight gain of the wooden material (claim 7 provides it is 5% or more). Claim 6 provides that the wooden material is dried to a moisture content of 13% or less. Claim 8 is drawn to a method of treating a wooden material comprising subjecting the wood to bleaching treatment and a substituting treatment wherein the phenol hydroxyl group is substituted with another group. Claims 9-12 provide that the substituting treatment is an oligoesterfication, etherfication, formaldehyde, or acetylating treatment. Claim 13 provides the bleaching solution is hydrogen peroxide, chlorite solution, or a hypochlorite solution and that the pH is adjusted to 9-12. Claim 14 provides that the acetylation treatment is in the range of 1-25% based on weight gain of the wooden material (claim 15 provides it is 5% or more).

Zemans teaches a method of bleaching a wooden article comprising contacting the wooden article with a basic solution, subjecting the wooden article to a bleaching agent with

hydrogen peroxide, washing the wooden article and then contacting the wooden article with acetic acid to neutralize the alkali residue on the article (claims 1-12). Zemans et al. also teaches that the pH of the hydrogen peroxide is adjusted to be greater than 10 and less than 11 (column 3, lines 22-24). Zemans additionally teaches that it is preferred to dry the lignocellulosic material to be acetylated. Although the acetylation reaction can be carried out on lignocellulosic material with a high moisture content, an increasing content of water yields an increasing formation of byproduct acetic acid due to hydrolysis of the acetic anhydride. To avoid an unnecessarily high consumption of the reagent anhydride, the moisture content should not exceed 20 percent, preferably not exceed 10 percent by volume. For example solid wood boards, drying to a moisture content below about 5 percent can lead to distortion of the material and formation of cracks, and should accordingly be avoided. What is not taught by Zemans et al. is to specifically acetylate the product or the degree of acetylation, although they do disclose bleaching followed by treatment with acetic acid, which would acetylate the product.

Rowell et al. teaches a method of treating a wood material comprising subjecting the wooden material to acetylation wherein the acetylation results in a weight gain of from 13-12 percent by weight and wherein the moisture content of the wooden material is from 0-20% by weight (column 4 lines 66-68 and column 5, lines 27-31). Rowell teach that the advantages obtained when acetylating a wooden product include quality improvement, wherein stabilization of the surface layer by acetylation can improve long-term adhesion of applied surface coatings and minimize formation cracks and the loosening of coatings (column 4, lines 41-44).

It would have been obvious to one of ordinary skill in the art at the time of the invention to bleach and acetylate a wooden material as applicants have done with these references before

them. Zemans teaches that their bleaching method is beneficial because the bleaching process would allow for the removal of unwanted dark spots and blemishes without raising the grain of wood or weakening or splitting the wood. Moreover, Rowell teach that wood is biologically degraded because organisms recognize the polysaccharide polymers in the cell wall and have very specific enzyme systems capable of hydrolyzing these polymers into digestible units. Because high molecular weight cellulose is primarily responsible for strength in wood, strength is lost as this polymer undergoes biological degradation through oxidation, hydrolysis, and dehydration reactions. Because dimensional instability and biological degradation are chemical phenomena, it is possible to improve both of these undesirable properties of wood by changing the basic chemistry of the cell wall polymers. By chemically modifying the cellulose and hemicellulose components, for example, the highly specific biological enzymatic reactions cannot take place because the chemical configuration and molecular conformation of the substrate has been altered. If the hydroxyl groups on the cell wall polymer are esterified with acetic anhydride, both dimensional stability and resistance to biological attack can be achieved (column 1 of Zemans et al.). Additionally, one of skill in the art would find it obvious to modify the hydroxyl groups to impart stability by various other means, such as by oligoesterfication, etherfication, or treatment with formaldehyde, as Zemans teaches that modifying the hydroxyl groups indeed imparts stability to the product. Thus, one would be motivated to bleach the wooden material with art know procedures to provide a wooden material that is free of blemishes and pleasing top the eye, and thus acetylate the wooden material to provide strength and keep the material free from degradation.

Applicant's arguments filed September 12, 2003 have been fully considered but they are not persuasive. It is noted that applicants argue that the bleaching of wooden material is known and the acetylating treatment of wooden material is known, however, the combination of treatments is not known. The combination of treatments, as argued by applicants, significantly suppresses the change of color in the wooden material caused by exposure to heat or light. However, it is noted, that these limitations are not in the claims. Moreover, there is no requirement that the prior art must suggest that the claimed product will have the same or similar utility as that discovered by applicant in order to support a legal conclusion of obviousness. That is, Zemans and Rowell provide guidance and motivation to bleach and acetylate a wooden material, and although the motivation is based on something which is different from that which applicants discovered, the obviousness rejection is still deemed proper. Moreover, applicant's state there must be some motivation or suggestion in the art to combine the references, and in the present case there is no motivation set forth. The examiner respectfully disagrees. Zemans teaches bleaching process can weaken or split the wood (column 1, lines 65-69). Rowell teaches that acetylation of the hydroxyl groups provides both dimensional stability and resistance to biological attack. Thus, the acetylation would strengthen the possible weakness caused by bleaching and one of ordinary skill in the art would indeed be motivated to acetylate a previously bleached product to provide a dimensionally stable product which is resistant to biological attack and degradation.

Conclusion

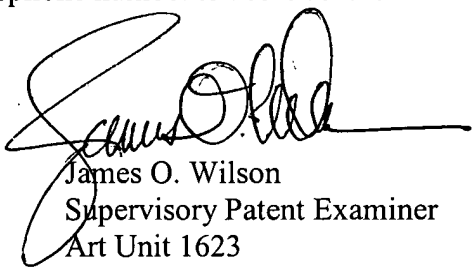
THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Traviss C McIntosh whose telephone number is 703-308-9479. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James O. Wilson can be reached on 703-308-4624. The fax phone number for the organization where this application or proceeding is assigned is 703-305-3014.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0196.



James O. Wilson
Supervisory Patent Examiner
Art Unit 1623

Traviss C. McIntosh III
November 19, 2003